Program Requirements & Recommendations

Current program standards for Technology Education have been approved by the State Board of Professional-Technical Education. Refer to the standards section of this report for a detailed listing of established standards. Funding, legislation and the changing backgrounds of students entering Technology Education continues to bring changes to most programs. The prudent and balanced use of program standard guidelines can help maintain program quality while at the same time equip students for successful careers or continued education.

Administration (Required)
- Professional-Technical funding is administered and program fiscal records are maintained in accordance with state policies and guidelines.
- A budget exists for the professional-technical program and the instructor is involved with its development.
- Contracts for extended employment must include a plan approved by the school administrator. The plan should be consistent with program philosophy and goals. The time beyond the normal academic year supported with professional-technical education funds must have a program of work with emphasis on program improvement and specialized student instruction.

Staff (Required)
- Professional-Technical instructor(s) hold(s) current credentials and endorsements.

Staff (Recommended)
- Professional-Technical instructor(s) participate in professional development activities.

Program of Study (Required)
- A program advisory committee provides input for program improvement.
- Student leadership development is integral to the program as generally provided through student professional-technical organizations such as TSA.

Program of Study (Recommended)
- A written program philosophy is compatible with the educational objectives of the school district.
- Written program goals reflect the needs of community, business/industry, and students.
- Curriculum supports reinforcement of basic academic, technical and employability skills.
- Resources provided support the curriculum.
- An evaluation is conducted and used for program planning and improvement.

Equity and Access (Required)
- Opportunities are provided for all students to participate in all professional-technical programs.
- Nondiscriminatory counseling, curriculum design, classroom procedures, and placement services are followed.

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Student Services (Required)
- Guidance services are provided.

Student Services (Recommended)
- Instructor, in cooperation with school counselor, is involved with guidance and placement.
- A plan for disadvantaged and/or handicapped students is used for assessment of interests, abilities, and special needs.

Facilities and Equipment (Required)
(See Recommended Facilities)
- Students are provided with clean, safe classrooms/laboratories.
- Enrollment does not exceed capacity standards as mutually established and recorded in the State Division of Professional-Technical Education (see recommended facilities).
- Equipment is systematically updated, maintained, and inventoried.
- Laboratory facilities and equipment support curriculum.

Instructor Certification

Individuals employed to teach/direct reimbursable professional-technical classes or programs in secondary or postsecondary schools are ***required*** to hold a Secondary Certificate ***with current endorsement in an appropriate occupational discipline.***

If an applicant does not meet requirements, a current occupational teaching credential from another state may be endorsed for use in Idaho up to five years. After that period, Idaho standards for the certificate ***must*** be met. Employment agreements are valid only if the occupational educator hold the credential required for the assignment of service to be performed. Appeals regarding certification or the Code of Ethics as related to professional-technical educators ***may*** be directed to the Idaho Professional Standards Commission.

Applications for professional-technical education certification need to be sent to the State Department of Education, Teacher Certification, P.O. Box 83720, Boise, Idaho 83720-0027. For questions, phone (208) 334-3216; fax (208) 334-2365; or email ddean@pte.state.id.us.

Becoming Certified

Occupational Teacher Preparation
Teachers graduating from an approved occupational teacher preparation program qualify for an occupational endorsement to teach in programs approved by the State Division of Professional-Technical Education. The occupational teacher shall have accumulated two (2) years (4000 clock hours) of related work experience or shall have completed an approved practicum in their respective filed of specialization.

Interim Certificate in Lieu of Secondary Occupational Endorsement
Secondary-certified educators may apply for the Interim Certificate if they have not completed the required occupational teacher preparation course work. This certificate is issued for one (1) year and may be renewed twice, provided there is annual progress toward the needed endorsement. An additional renewal may be granted because of extenuating circumstances.

Technology Education Endorsement
To qualify for the Technology Education Endorsement (6-12) Twenty semester credit hours to include course work in each of the following areas must be completed.

- Communication Technology
- Computer Applications
- Construction Technology
- Electronics Technology
- Manufacturing Technology
- Power, Energy and Transportation
- Principles of Technology

Evolution of the Technology Education Endorsement

In the early 90's, the endorsement for Industrial Arts was changed to Industrial Technology. At this time Industrial Arts instructors were required to take a series of courses to receive the new endorsement. The purpose of the change was to refocus programs to become more technology oriented in content and application. To aid in this effort grants were provided by the Division to those districts wishing to upgrade their programs.

In 1997, the Industrial Technology Endorsement was renamed the Technology Education Endorsement. The change was non-substantive regarding qualifications of the instructor; however, instructors were asked to have the endorsement name changed upon renewal of their certificates.

Program Visitation

The State Division Program Manager for Technology Education shall from time-to-time visit programs throughout the state. Program visits may be formal or informal in nature and may focus on any or all the following areas:

- Program philosophy and objectives
- Program instructional components
- Program leadership development of students and instructors
- Program recruitment and enrollment of students
- Program public relations and publicity
- Program facilities and equipment
- Program staffing
- Program administration and supervision
- Program finances
- Program evaluation

See the appendix for a copy of the Technology Education program evaluation form.

Advisory Committees

Today's rapidly changing society requires that the educational institutions and the communities they serve work closely together, especially in Professional-Technical Education. The State Board for Professional-Technical Education is not the only agency with interest in professional-technical programs. In Idaho, Professional-Technical Education may look to local advisory committees for assistance and guidance. These committees have no administrative authority but instead provide a strong connection between the community and the schools they serve.

Policy Statement–State
It is the policy of the Idaho State Board for Professional-Technical Education that an advisory committee be established for Professional-Technical Education programs before reimbursement can be authorized. The committee shall be advisory only, having no administrative authority, and is not created to take away any of the rights and/or privileges of the local governing board and administrative staff.

Policy Statement – Local
The local governing boards should develop a policy statement authorizing the establishment of and necessity for a professional-technical advisory committee(s) for the schools' or institution's professional-technical education programs.

Types of Committees
1.   Umbrella Advisory Committee - an umbrella advisory committee is representative of the community and can be established for all Professional-Technical Education courses offered in a school district. It consists of individuals who represent each professional-technical occupational area. (This committee is typically found in secondary schools.)

2.   Program Advisory Committee - a program advisory committee is representative of a specific occupational area that advises that particular program. A separate committee serves each Professional-Technical Education program offered in a school district or postsecondary institution.

3.   General Advisory Committee - a general advisory committee may be established to serve as a directional committee for the administration rather than for specific program areas. Membership is representative of community leaders from industrial, commercial, management, financial, legal, labor, and other fields. (This committee is typically found in postsecondary institutions.)

Purpose
A professional-technical advisory committee is a group of laypeople selected by local educational administrators to serve in an advisory capacity to the Professional-Technical program. The purpose of an advisory committee is to advise school administration and instructors with respect to the development and

maintenance of quality Professional-Technical Education programs. Properly functioning advisory committees help local schools ensure that programs are consistent with the needs of the students and the community.

Structure
1.   An advisory committee is a group of laypeople who are:

      a.   recognized for their expertise in their specific occupational area
      b.   representative of the employers and employees in the community
      c.   organized to advise school personnel on matters concerning the Professional-Technical education program

2.   The advisory committee shall be composed of business, industry and labor representatives of the occupation(s) for which training is provided. The educational administrators should study the collective make-up of persons employed in the occupation, including the geographical area served, and select representation that matches the industry and the community.

3.   Representation on the committee should include as appropriate to the population of the local community, persons from both sexes, racial and/or ethnic minorities and the handicapped.

4.   At the first or second meeting, the committee should consider establishing a set of operating policies.

Organization
Effective advisory committees are those whose members are recognized professionals in their areas of responsibility, have an understanding and acceptance of the committee objectives and a desire to accomplish them through teamwork and cooperation.

Constructive planning should be undertaken by educational administrators prior to organizing a committee. This will help assure the effectiveness of the committee.

After determining the type of committee needed and preparing a general structural plan, the administrator should appoint a person to serve as temporary chair. The administrator and/or chair should:

1.   Select committee members.
2.   Send letters of appointment signed by the appropriate administrator.
3.   Call the first meeting, provide time and place, and attach a tentative agenda.

Functions of Advisory Committees
Advisory committees can perform a wide variety of functions. The following list, not intended to be all inclusive, should be useful in providing direction.

1.   Provide assistance regarding:
      a.   Current labor needs
      b.   The relevance of programs (courses being offered by the educational agency in meeting current job needs)

      c.   Job opportunities for students and graduates
      d.   Placement activities
      e.   The relationship of basic skills such as problem-solving, communication, mathematics, and employability skills and habits to job needs.

2.   Determine community needs:
      a.   For Cooperative Professional-Technical Education programs
      b.   For short term training classes
      c.   For new and emerging occupations
      d.   For nontraditional employees
      e.   For inservice of employees

3.   Assist in the preparation and selection of program material to assure it meets the needs of students and reflects industry needs.
      a.   Review program objectives
      b.   Review present course outlines and proposed textbooks
      c.   Assist in identifying competencies to be taught, including basic skills.
      d.   Suggest revisions or additions

4.   Assist with program evaluation activities.

5.   Provide inservice opportunities for instructors.

6.   Provide support services for students enrolled in nontraditional programs who need special assistance.

7.   Recommend and assist in obtaining resource personnel and guest speakers.

8.   Assist in surveys.
      a.   Determine data to be gathered
      b.   Suggest methods for securing data
      c.   Assist in data collection and interpretation, i.e., status of men and women in nontraditional programs

9.   Provide suggestions for public relations activities.
      a.   Promote Professional-Technical Education in the community
      b.   Provide current occupational information to counselors
      c.   Participate in exhibits or displays
      d.   Develop plans for recognizing students through the media
      e.   Help prepare and review brochures explaining the Professional-Technical Education program
      f.   Advise on forms of program promotion
      g.   Become advocates for students in nontraditional occupational programs
      h.   Assist with job placement

10.   Support professional-technical student organizations.

    a.   Suggest means of raising chapter funds
    b.   Help secure speakers
    c.   Offer suggestions for obtaining financial aid for individual members
    d.   Serve as judges for competitive and other events
    e.   Attend leadership development activities and other chapter events

11.   Help plan special events such as:
    a.   Professional-Technical Education Week
    b.   National Student Organization Week
    c.   Professional-Technical Banquets and other applicable social activities
    d.   Special events and demonstrations
    e.   Field trips to industry

12.   Assist in the implementation of Tech Prep activities. The committee members of consortium schools should be selected for ad hoc and standing committees.

In addition to the previous functions, advisory committees may also wish to provide financial and legislative support; help establish scholarships and awards for honor students; support the administration in local appropriations and provide support for state and national legislation affecting Professional-Technical Education.

The committee may wish to assist the school or institution in determining other uses for existing facilities. Such activities may involve initiating activities for securing equipment and donations; making provisions for short-term training classes, and assisting in meeting the needs of handicapped students.

Membership
Membership of any advisory committee will vary depending on qualifications and number of people needed.

1.   Qualifications for Membership
Program advisory committee membership should consist of people from the community including representation from business, industry and labor who possess knowledge and work experience in the Professional-Technical program area for which they will serve. It is recommended that one of the members be either a student or a recent program graduate. Members of a general advisory committee should be more broad-based in their expertise. Local educational personnel are not suggested for membership on occupational program committees.

2.   Number of Members
The size of the committee is determined locally with consideration given to the size and makeup of the community. It is recommended that membership be not less than three nor more than nine.

3.   Method of Designation
Members of the program advisory committee should be selected by the local administration with the advice and counsel of the professional-technical teachers. The governing board should select the general advisory committee members.

4.   Term of Membership:
   a.   A regular term of office should be established. Membership should be staggered to allow for new members while retaining some experienced representatives to maintain continuity.
   b.   It is recommended that membership on the committee be limited to three years. The local administration should consider this when developing policies. Persons should be appointed with staggered terms to provide community continuity.
   c.   Vacancies should be filled with persons with similar backgrounds by the local administrator for the remainder of an unexpired term.

Organizing and Conducting Meetings

Schools vary in how frequently advisory committees are asked to meet. The most common plan is to schedule meetings at least twice per year. Meetings should be held only if there is work to be accomplished. The purpose of the committee helps to determine the frequency of the meetings. Contributions of advisory committee members depend to a great extent on how they are prepared for and oriented to their roles. If the professional-technical advisory committee is to be effective, responsibilities should be divided between all members so that no one individual has total responsibility for the committee's success.

The initial meeting is critical. It must establish and maintain the interest and support of committee members. Until a chair is selected by the committee, the administrator should appoint someone to serve temporarily in this capacity. It is essential that this person contact members, organize and conduct the first meeting.

For more information see the Professional-Technical Administrators Handbook for Advisory Committees.

Approved Technology Education Courses

The following are courses approved by the State Division of Professional-Technical Education. Reference: *Professional-Technical Programs, Titles, Codes and Descriptions* (2000).

Table 8. (Approved Technology Education Courses)

Course Number	Course Title
TE 1901	Exploring Technology
TE 1905	Fundamentals of Technology
Construction	
TE 1920	Construction Systems I
TE 1921	Construction Systems II
TE 1922	Introduction to Cabinetry
TE 1923	Advanced Cabinetry
Manufacturing	
TE 1931	Manufacturing Systems I
TE 1932	Manufacturing Systems II
TE 1933	Introduction to Robotics
TE 1934	Robotics Applications
TE 1935	Mechanical Design Applications
TE 0402	Computer Aided Manufacturing (CAM) Technology
Power/Energy/Transportation (PET)	
TE 1940	Power, Energy and Transportation Systems I
TE 1941	Power, Energy and Transportation Systems II
TE 1942	Introduction to Laser Technology
TE 1943	Vehicle Design Technology
TE 0501	Introduction to Electronics Technology
TE 0502	Electronics Applications
TE 0801	Aerospace/Flight Technology

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Communications	
TE 1951	Communication Systems I
TE 1952	Communication Systems II
TE 1953	Digital Imaging Technology
TE 1959	Video Editing Technology
TE 0220	Introduction to Drafting/Design
TE 0222	Introduction to Mechanical Drafting/Design
TE 0224	Introduction to Architectural Drafting/Design
TE 0226	Introduction to Electronics Drafting/Design
TE 0228	Introduction to Structural Drafting/Design
TE 0203	Technical Illustration Technology
TE 0240	Graphic Design Technology
TE 0303	Introduction to Computer Aided Drafting/Design
Networking and Related Technologies**	
TE 0703	Applied Physics I
TE 0704	Applied Physics II
TE 1926	Emerging/Engineering Technology Studies
TE 1928	Biotechnology Studies
TE 1954	Introduction to Information and Communication Technologies (ICT)
TE 1955	Information and Communication Technologies – Networking Applications
TE 1956	Information and Communication Technologies – Telecom Applications
TE 1957	Information and Communication Technologies – Video/Graphic Application
TE 1971	Principles of Technology I
TE 1972	Principles of Technology II
TE 9800	Occupational and Career Experience

** Instructors must have the appropriate industry and/or professional-technical certification

Capstone Courses:
Technology Education curriculum consists of a core of approved courses which are systematically sequenced to build on previously learned competencies and should reflect advancements in technology and approved practices throughout technology industries. Those courses which complete a sequence of the core are referred to as capstone courses.

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Funding for Approved Programs

GOAL :   Through a partnership between the State of Idaho and local school districts, Technology Education Programs will be provided funding for up-to-date equipment, supplies, and resources in such an exemplary manner that these programs will be models of excellence and achievement in preparing and supporting students in personal growth, career awareness and leadership development.
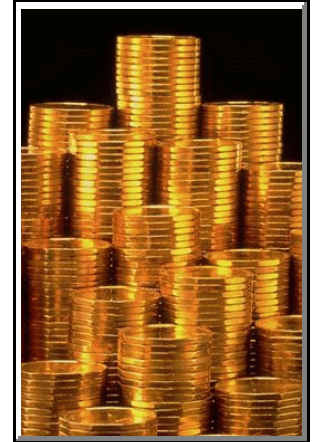
•   The State Division of Professional-Technical Education in conjunction with the Idaho legislature shall provide supplementary funding to assist school districts with the *added costs* associated with operating a quality Technology Education Program.

•   Local school districts will continue to provide necessary funding to meet budgetary needs of Technology Education Programs.

•   Local school districts will continue to encourage and support Technology Education Programs to be involved in local, district, state, regional, and national activities and career development events as related to program content.

•   Local school districts will encourage Technology Education instructors to conduct effective summer programs which extend beyond the normal academic year.

•   Local school districts are encouraged to support Technology Education instructors in professional development and program improvement activities.

•   The State Division of Professional-Technical Education shall support local programs by promoting available grant sources and encouraging local grant applications.

•   The State Technology Education Program Manager shall review and monitor Technology Education programs based on program standards and adjust funding as necessary.

Added Cost Reimbursement Funding Formula

The State Division of Professional-Technical Education provides funding to assist school districts with the added cost associated with offering approved Technology Education programs. Currently, the funding is awarded based on the **number of approved courses** offered during the school day. Funding is not dependent on student enrollment in an individual course or program. This funding is prorated for programs with more or fewer approved courses.

Allowable Expenditures for State Added Cost Reimbursement

Professional-technical money is distributed to offset the added costs of operating professional-technical programs. Costs associated with a normal classroom are <u>not</u> reimbursable (such as texts, regular teacher salary, desks, etc.)

<u>Approvable Items by Budget Category</u>

1. **Salaries, benefits and reimbursement for Time Beyond the Normal Academic Year:** Up to 100 percent of a maximum of eight weeks (depending on program area) beyond the normal academic year is approvable. Paid vacation may not be included. These contracts require that an appropriate program of work documenting activities in which the instructor is involved during the extended time be on file in the building principal's office. Activities related to formal instruction, project visitations, establishment of work sites, student organizations, and professional improvement are allowable. It is expected that the primary focus of this extended time will be instructional activity, including project/work visitations. Only those benefits associated with the portion of actual salary reimbursed are allowable.

2. **Travel:** Instructor travel costs relating to professional development, specialized instruction and supervision of student contests and conferences are reimbursable. Describe anticipated professional and program development activities which will improve the professional-technical program. Approvable activities include, but are not limited to: professional seminars, workshops, state sponsored meetings, summer conference and back-to-industry experiences related to the professional-technical program. **<u>(Workshop fees may be included, but not professional dues or tuition costs.)</u>**

   Travel for supervision of student conferences and contests should also be included here. The Division does not reimburse student conference travel through a separate process.

3. **Other Expenses:** Only those expenses not fitting into the other 4 categories should be included here. The primary use for this category is for outside services contracted by the district.

4. **Instructional Materials and Supplies:** Items to be purchased must be directly related to the program. Approvable instructional materials and supplies may include such items as: reference texts, student manuals, durable aids, and computer software. Regular classroom texts and other items associated with a standard instructional program are **<u>not</u>** reimbursable.

5. **Instructional Equipment:** Items to be purchased must be directly related to the program. Equipment means tangible property having a useful life of more than one year and an acquisition cost of $300 or more per unit. Instructional equipment must be identified on Form 25 for inventory purposes (to be submitted with the 10R).

The program funding for a typical school year is outlined in Table 9.

Table 9. (Added Cost Reimbursement Funding)

Full-Time Equivalent	Program Units	Estimated Funding*
.80 - 1.00	1.0	$6,840
.60 - .79	.8	$5,472
.40 - .59	.6	$4,104
.20 - .39	.4	$2,736

* Based on a full comprehensive program

Recommendations for Technology Education Programs
- Minimum program standards be verified for continuation of a funded program.

- Individual Technology Education program compliance with minimum program standards should be reviewed at least every five years by the Program Manager with the Idaho Division of Professional-Technical Education.

- Programs not in compliance with minimum standards shall be placed on conditional approval or probationary status, followed by loss of program funding if improvement is not evident within one year.

- Maintain the regular program funding for secondary Technology Education programs. As available, funding be increased to address new initiatives or priorities.

- Efforts be made to suggest appropriate uses of federal funds in regular professional-technical programs.

- Consider development of a pilot program initiative to provide additional competitive funding to develop model programs and stimulate new and innovative efforts in Technology Education programs.

Primary Funding Sources for Secondary Programs

Regular Program Added-Cost Funding

<u>Source</u>
1. Purpose –
   a)   To help pay for the added cost of providing professional-technical programs of study to high school students.
   b)   To stimulate creation of new professional-technical programs.
2. Method of Accessing – School districts apply for the funds (Form10-N). Due February 15. The amount of funds to be granted to each district is based on the number of approved reimbursed periods taught in each program (Form 10-D).
3. Distribution – Schools must request reimbursement based on actual expenditures (Form 10-R). Equipment with a purchase price more than $300 must be inventoried (Form 25). Requests for reimbursements are due by July 15.

Professional-Technical School Funds

<u>Source</u>
1. Purpose –
   a)   To provide high-end, high-quality, state-of-the-art professional-technical programs that are too expensive to offer in a single comprehensive high school setting.
   b)   To provide programs based on industry standards that lead to industry certification.
2. Method of Accessing – Districts or Cooperative Service Agencies must apply for Professional-Technical School approval. Applications are due by the first Friday of July for funding to begin one fiscal year later.
3. Distribution – Funds are distributed based on ADA calculated by using aggregate hours and/or aggregate attendance. The added-cost support factor is calculated by multiplying .33 times the support units. Seventy percent of the amount is distributed in December and the final payment is distributed following the third enrollment reporting period.

Perkins III Federal Funds

<u>Source</u>
1. Purpose –
   a)   To help all students achieve professional-technical and academic skills.
   b)   To encourage the integration of professional-technical and academic instruction.
   c)   To link secondary and postsecondary programs of instruction.
2. Method of Accessing – Districts or consortiums of districts apply for funding. Based on a five year plan, annual applications and program improvement plans are used to continue funding each year. Applications are due by May 15.
3. Distribution – Schools must request reimbursement based on actual expenditures (Form 10-R). Equipment with a purchase price more than $300 must be inventoried (Form 25). Requests for reimbursements are due by July 15.

Other Sources -- One-Time Grants & Special Grants

1.   Purpose – Designated by source of funds and intent of the grant. Examples are: one-time
        equipment grants, private foundation IT funds, etc.
        a)   Method of Accessing – RFP, local need/request, or application.
        b)   Distribution – Schools must request reimbursement based on actual expenditures (Form
                10-R). Equipment with a purchase price more than $300 must be inventoried (Form 25).
                Requests for reimbursements are due by July 15.

Recommended Facilities

In the spring of 1999, the State Division of Professional-Technical Education established a task force to develop prototypical educational specifications for professional-technical facilities for the State of Idaho. The task force identified educators (in both secondary education and post secondary education) and private sector representatives from across Idaho to work on fourteen different committees representing areas of Professional-Technical Education. Those committees met with professional school facility planners in the spring of 1999. In the fall of 1999, the committee members reviewed draft prototypical educational specification documents. In the late fall of 1999, the professional facility planners presented the final draft of this document to educators from all six regions of the State to take final comments and suggested improvements. The following information for Technology Education facilities is a result of the efforts of this committee and the Division.

Areas
Table 10. (Area Specifications for Facilities Planning)

DESCRIPTION	EST. STAFF	EST. STUDENTS	SQ. FT. TOTAL
Storage (Materials)			200-500
Storage (projects)			300-500
Storage (tools)			250-500
Classroom/clean lab	1-2	16-24	2000
"Dirty" Lab	1-2	16-24	2000-3000
Restrooms/Clean Up Area			200
Offices	1-2	1-2	120
Paint/Finish Room	2-4	2-4	150-400
Video Lab/Broadcasting	1-2	4-6	200-500
Darkroom	1-2	4-6	100-200
Welding/Gas (outside storage)			
Construction yard	1-2	6-10	

Internal/External Relationships - (What should be near this area)
- The classroom should be near the lab and office.
- The storage area should be near the classroom and the lab.
- The material storage area needs to be near an outside delivery area.
- A cleanup area and restrooms should be near the lab.
- The video production area should be near the classroom or "clean area."
- Any outside storage should be close to the lab.
- These classes should be near other noisy classes.

Internal/External Relationships - (What should **not** be near this area)
- These classes should not be near any quiet areas.

Utilities
Plumbing:
- Plumbing should be positioned or dampened to minimize noise.
- In the cleanup area a gang sink should be provided.
- A drinking fountain should be plumbed in the lab, away from machinery.
- An eye wash and emergency shower should be located in the lab.
- Drains will need to be provided in the cleanup area.
- Multiple compressed air outlets should be plumbed to the perimeter of the lab and classroom and in the outside area.
- Consider natural gas plumbed to the foundry if needed.
- Welding gas should be piped from the source to stations in the lab.
- Outside water should be plumbed near the lab door.

HVAC:
- The heating, ventilation, and air-conditioning system needs to be of sufficient size to keep each instructional space at a comfortable temperature.
- The system needs to have a fresh air exchange system to keep high air quality in each instructional space.
- The general classroom supply and exhaust ducts need to be positioned to minimize any draftiness in the room.
- The HVAC controls need to be designed to allow individuals the ability to modify the classroom temperature for the instructional requirements of the classroom activities.
- The controls need to be positioned so that the room temperature is not "misread" (e.g., not too close to a door, window, or vent).
- A dust collection and particulate filtration system is needed, especially in the dirty lab. If this is a floor system, provide a duct cleanout.
- Provide exhaust systems at each welding station.
- An exhaust system is needed in the paint and finish areas.
- The broadcasting area may need additional air-conditioning.

Electrical:
- Electrical supply outlets need to be sufficient to meet the electrical equipment needs of the modern classroom.
- Electrical supply outlets need to be placed on each stationary wall and at the counters in each classroom.

- Electrical supply outlets need to be provided for any built-in audio-visual equipment installed in the classroom (e.g., television, VCR, electric ceiling screen, etc.) Controls for the screen should be by the light switches.
- Each classroom should have occupancy sensors installed for lights.
- The perimeter of the clean lab will need extra outlets both four-plex and duplex.
- Variable power needs to be provided in the clean lab.
- Drop down overhead power is needed in multiple locations of the clean lab, particularly at the center work tables.
- In the dirty lab, three-phase power is needed around the perimeter and hard wired to the stationary equipment.
- A master switch should be installed controlling all equipment.
- The welding booths will need 110 and 220 volt power.
- Electricity needs to be provided for an overhead door.
- Power needs to be provided to the dust collection system.
- Explosive proof switches are needed in the paint room.
- Electrical supply should be oversized to accommodate future growth.
- When planning lighting placement, consider computer screen glare.
- Electrical supplies should be oversized for future expansion.

Lighting:
- Lighting needs to be even across the classroom.
- The lighting controls need to accommodate an instructor's need to vary the light intensity for different instructional tasks.
- The light fixtures need to be energy efficient to keep operating costs at a minimum.
- The dirty lab will require 80-100 foot candles of light.
- Increased lighting is needed in the paint room.
- Security lights are needed in the outside storage area.
- Natural lighting should be provided wherever practical.
- The lighting needs to be higher than a normal classroom in the clean lab with no shadows.
- All lighting should have staged controls.
- Specialty lighting is needed in the broadcast room.

Technology:
- The clean lab should have 20 data drops for student computers around the perimeter of the lab. Two data drops should be provided for the instructor's computer. The instructor's data drops need to be placed in different spots in the room to allow the teacher's desk to be moved periodically.
- A data drop to the ceiling projector will be needed in the clean lab.
- Data drops are needed in each office.
- Data drops may be needed in the storage room and tool room.
- The dirty lab will need ceiling data drops to the work tables.
- Some fixed equipment may need data drops.
- Each classroom needs to have access to cable TV for commercial, satellite and closed circuit broadcasts over the cable.
- Phone jacks should be placed near the door to the classroom and near the teacher's area.
- The phone system should be programmed to enable outgoing calls directly from the classroom but incoming calls allowed only after going through the main office switchboard.

- Each classroom should be equipped with an integrated clock, intercom, and bell system.
- Each classroom should be equipped with a TV, VCR, electric screen and overhead/LCD projector.
- A Smart Board should be considered for the classroom.
- The area should be wired with data cable to enable the connection of a local area network and a wide area network.
- Oversized conduit should be considered for future growth.

Surfaces
Floors:
- Vinyl composition tile should be installed in the clean lab and all areas other than the dirty lab.
- Sealed concrete is needed in the dirty lab.
- Zoned striping should be provided in the dirty lab and in the clean lab where appropriate.

Walls:
- A 4'x16' white board with friction clips needs to be provided.
- Wall and ceiling surface materials need to accommodate the acoustical needs of the classroom and the labs.
- In the labs, masonry with washable, brightly painted surfaces are needed.
- Consider high windows for some natural light if possible.
- Windows need to be of double pane glass with operable integral blinds where practical.
- Interior windows between the office and the labs are necessary.
- If possible, place Interior windows between the two labs.
- All windows should have safety glass installed.
- Some movable walls may be appropriate in some of these spaces.
- Tackable wall space should be provided in the classroom and clean lab.
- Slanted windows should be installed in the broadcast room between the main video room and the control room for sound deflection.

Ceilings:
- The ceiling height of the dirty lab should be 12'-14'. All other ceilings should be 9'-12'.
- The ceiling should be a durable suspended ceiling with acoustical tile.
  Doors:
- Each general classroom should have a standard sized exit door.
- Each general classroom door should have a small narrow window.
- An electric overhead door should be installed in the dirty lab. A remote control door opener should be considered.
- Double doors should be installed between the labs.
- Double doors are needed to the paint room.

Storage
- Each clean lab needs to have base cabinets in the perimeter for 20 computer stations. Each station should have open knee space for two students.
- Each clean lab needs to have overhead wall cabinets above the base cabinets.
- Each clean lab needs to have sufficient storage for those specialized books, magazines, and other instructional materials necessary for successful instruction.
- Each clean lab needs to have some locking cabinets specifically for the personal effects of the instructors.

- • Space is needed for two (2) four-drawer, letter-size file cabinets.
- • The storage room should have adjustable shelving and floor-to-ceiling cabinets. Some of these cabinets need to be secure.
- • Some of the cabinets in the storage room need to be designed to hold flammable hazardous materials.
- • Some base and some overhead cabinets are needed in the office.
- • Some of the cabinets in the office need to be secure and need to be floor to ceiling.
- • Some of the office base cabinets need to have knee space for a computer desk.
- • The dirty lab needs storage under the center work tables. This storage should be a combination of open shelving and some drawers.
- • The dirty lab should also have storage under the perimeter work benches. This storage should be open shelving.
- • Storage racks are needed for the metal, wood, and sheet goods.

Furniture and Equipment
- • Each clean lab needs to be equipped with a television, VCR, overhead/LCD projector, and electric ceiling mounted screen.

Table 11. (Equipment List for General Fabrication Technology Education Labs)

Wind tunnel	Jointers
CNC machines	Thickness plane or sander
Laser cutter	Lathes
Drill press	Buffers
Routers	Computers and peripherals
Radial arm saw	Scales
Table and Miter saw	Video Equipment
Welders	Air Compressor
Band saw	Microwave equipment
Generators	Telecommunications
Injector molders	Plotters

Program offerings may vary given community needs, check with the state program manager for a list of equipment for each program area.

Safety Issues
- Safety striping is needed on the lab floors.
- The correct storage for hazardous materials should be provided.
- A first aid kit should be provided in the lab.
- All furniture should be ergonomically correct.
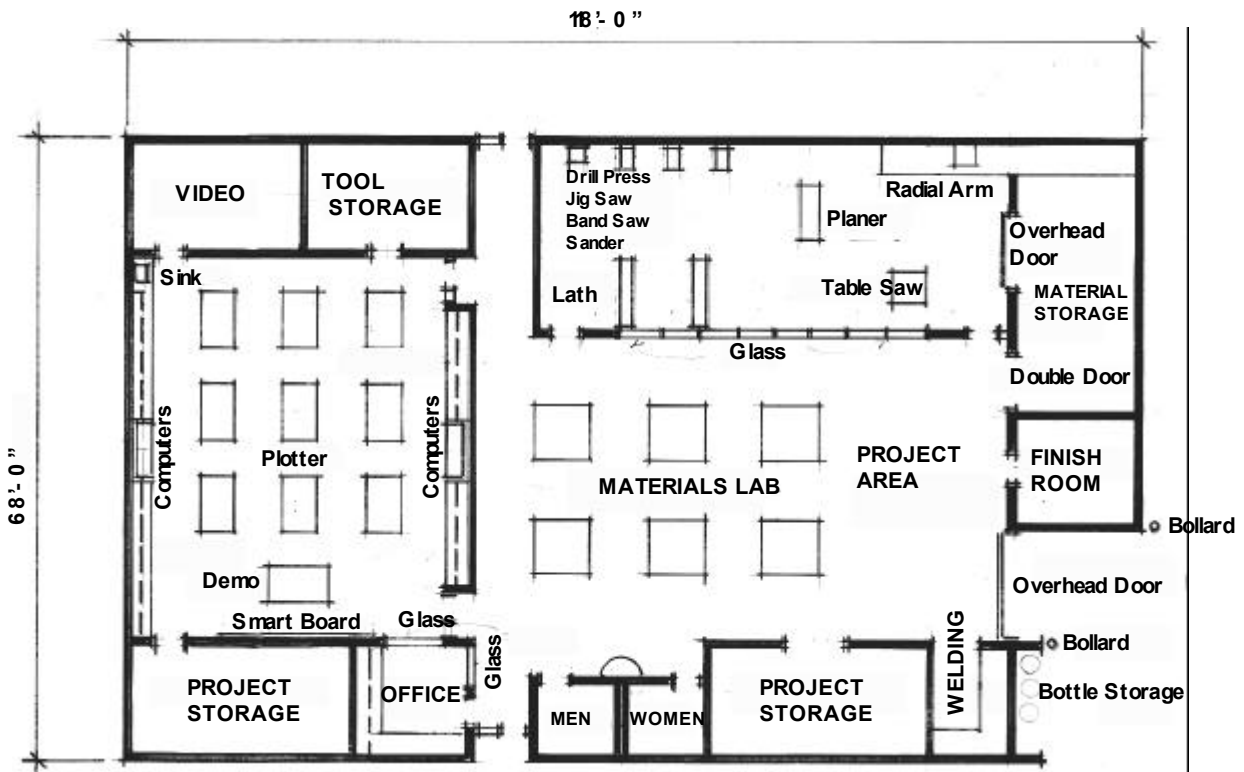
TECHNOLOGY EDUCATION
The Matrix Group   Not to Scale

Figure 4. (Blueprint for Technology Education Lab)

Program Inventory

The local education agency (LEA) is required to maintain a local inventory of equipment. The local education agency is also responsible for maintaining the equipment and exercising reasonable care and safekeeping of this equipment.

When equipment is acquired by a consortium, wholly or in part with funds provided by the IDPTE, title shall be vested in the consortium fiscal agent and maintained on inventory until disposed of in accordance with state and/or federal regulations governing such properties by IDPTE.

APPROVAL MUST BE GIVEN BY THE STATE DIVISION OF PROFESSIONAL-TECHNICAL EDUCATION PRIOR TO ANY DIVERSION, SALE, OR TRADE-IN OF EQUIPMENT PURCHASED WITH FUNDS PROVIDED IN WHOLE OR IN PART BY THE IDPTE.
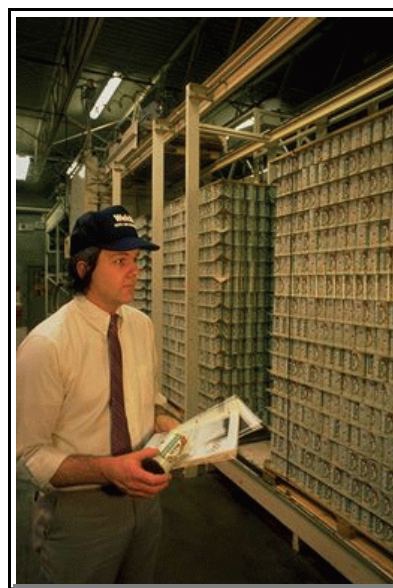
1. DEFINITIONS

    a. "Acquisition cost" of an item of purchased equipment means the net invoice price of the equipment, including the cost of modifications, attachments, accessories, or auxiliary apparatus necessary to make the equipment usable for the purpose for which it was acquired.

    b. "Amount received for trade-in" of an item of equipment traded in for replacement equipment means the amount that would have been paid for the replacement equipment without a trade-in minus the amount paid with the trade-in. The term refers to the actual difference, not necessarily the trade-in value shown on an invoice.

    c. "Equipment" means tangible personal property having a useful life of more than one year and an acquisition cost of $300 or more per unit.
    NOTE: Computer software is considered to be a supply.

    d. "Local education agency" (LEA) means a local school board or a State corrections educational agency.

    e. "Personal property" means property of any kind except real property. It may be tangible-having physical existence, or intangible-having no physical existence, such as patents, inventions, and copyrights.

    f. "Replacement equipment" means property acquired to take the place of other equipment. To qualify as replacement equipment, it must serve the same function as the equipment

replaced and must be of the same nature or character, although not necessarily the same model, grade, or quality.

g.   IDPTE - Idaho State Division of Professional-Technical Education

h.   Special or Ancillary Services - Projects or programs which are supportive to Professional-Technical Education (Research, Guidance, Personnel Development and Curriculum Development).

i.   "Supplies" means all tangible personal property other than equipment
        NOTE: Computer software is considered to be supplies.

2.   <u>TITLE</u>

When equipment is acquired by an LEA, wholly or in part with funds provided by the IDPTE, title shall be vested in the LEA and maintained on inventory until disposed of in accordance with state and/or federal regulations governing such properties by IDPTE.

When equipment is acquired by a consortium, wholly or in part with funds provided by the IDPTE, title shall be vested in the consortium fiscal agent and maintained on inventory until disposed of in accordance with state and/or federal regulations governing such properties by IDPTE.

3.   <u>REQUESTING EQUIPMENT FROM IDPTE</u>

In order to purchase equipment and receive reimbursement from the IDPTE, the LEA/Consortium must secure prior approval **(Approval of the Federal Application or FORM 10-F Budget Request constitutes prior approval).** Only the specific number and kind of approved items in the Federal Application or FORM 10-F <u>may be purchased</u> unless an amendment has been approved by the appropriate state program manager. Approval of an amendment must be in writing before a purchase is made.

<u>AMENDMENTS</u> -- Changes may be expected because of price increases, recom-mendations by advisory committees, obsolescence, or other reasons. All amendments for purchase of equipment should be requested prior to February 15.

4.   <u>ACTUAL EQUIPMENT PURCHASE</u>

a.   The LEA/Consortium Fiscal Agent is responsible for purchasing equipment approved by the IDPTE for use in Professional-Technical programs. <u>All local and state laws, regulations and procedures must be followed in the purchase of equipment</u>. (For example, if local regulations require formal bids, then formal bids must be obtained.) After an LEA/Consortium Fiscal Agent has been notified that equipment has been approved for purchase, such equipment must be purchased or a signed purchase order shall be executed by April 1 of the current fiscal year. If invoices for equipment purchased are not received and payment made by the LEA/Consortium Fiscal Agent prior

to June 1 of the current fiscal year, reimbursement may be disallowed and the equipment request may become null and void.

b.   All equipment purchased by LEAs/Consortia with funds provided by the IDPTE must meet all federal and state Occupational Safety and Health Administration rules and regulations.   LEAs/Consortia should require a statement of safety compliance of rules and regulations from vendors before purchase is made.

5.   SUBMITTING CLAIM TO IDPTE FOR EQUIPMENT PURCHASED

The State Division of Professional-Technical Education Inventory Record Form #25 must be submitted with the CS7/10R Form to substantiate reimbursement claims that include equipment meeting the definition identified in Section I-C.   Put only items for one program/project on each Form #25. A paid invoice must be on file at the LEA/Consortium Fiscal Agent and retained for compliance with state and federal regulations.

6.   USE OF EQUIPMENT PURCHASED WITH FUNDS PROVIDED BY THE IDPTE

The LEA/Consortium shall retain and use all equipment in an approved Professional-Technical program as long as there is a need for the purpose intended for such equipment. Equipment must be used in an approved professional-technical program or for special professional-technical projects and/or ancillary services.

Equipment purchased with funds provided in whole or in part by the Idaho State Division of Professional-Technical Education, when not being used to carry out the purposes for which it was purchased or other professional-technical education purposes may be used for other instructional purposes if: (a) the acquisition of the equipment was reasonable and necessary for the purpose of conducting a properly designed project or activity; and (b) the other use of the equipment is after regular school hours or on weekends.

The use of the equipment purchased with funds provided in whole or in part by the Idaho State Division of Professional-Technical Education when not being used to carry out the purposes for which it was intended must: (a) be incidental to the use of that equipment for the purposes for which it was purchased; (b) not interfere with the use of that equipment for the purposes for which it was purchased; and (c) not add to the cost of using that equipment for the purposes for which it was purchased.

7.   MAINTENANCE OF EQUIPMENT

Adequate maintenance procedures shall be implemented by the LEA/Consortium to keep the equipment in good working condition and repair. **The cost of such maintenance is borne by the LEA/Consortium.**

8.   INVENTORY CONTROL SYSTEMS TO BE MAINTAINED

Procedures for managing equipment (including replacement equipment) until transfer, replacement, or disposition takes place shall, at a minimum, meet the following requirements:

a.	Property records shall be maintained accurately. For each item of equipment, the records shall include:

1.	A description of the equipment, including manufacturer's model number, if any.

2.	An identification number, such as the manufacturer's serial number.
3.	Identification of the grant under which the recipient acquired the equipment.
4.	The information needed to calculate the Federal share of the equipment.
5.	Acquisition date and unit acquisition cost.
6.	Location, use and condition of the equipment, and the date the information it was reported.
7.	All pertinent information on the ultimate transfer, replacement, or disposition of the equipment.

b.	A physical inventory of equipment shall be taken and the results reconciled with the property records at least once every 2 years to verify the existence, current utilization, and continued need for the equipment. Any differences between quantities determined by the physical inspection and those shown in the accounting records shall be investigated to determine the causes of the differences.

c.	A control system shall be in effect to insure adequate safeguards to prevent loss, damage, or theft of the equipment. Any loss, damage, or theft of equipment shall be investigated and fully documented by local police or law enforcement officials.
The LEA/Consortium Fiscal Agent shall be responsible for replacing or repairing equipment which is lost, damaged, stolen, or destroyed.

d.	Adequate maintenance procedures shall be implemented to keep the equipment in good condition.

e.	Where equipment is to be sold and the Federal Government is to have a right to part or all of the proceeds, selling procedures shall be established which will provide for competition to the extent practicable and result in the highest possible return. *(Section 74.140, EDGAR)*

9.	DISPOSITION OR DIVERSION OF EQUIPMENT WHEN NO LONGER NEEDED IN A PROFESSIONAL-TECHNICAL PROGRAM OR CONSORTIUM

a.	In the event the membership of a consortium changes, or if a consortium is dissolved, equipment purchased with IDPTE funds by the consortium will revert to the State Division of Professional-Technical Education. Districts that disengage themselves from a consortium may be allowed to retain equipment purchased if the projects (or programs) are maintained. If no appropriate projects/programs are maintained the Division will transfer the equipment to other appropriate projects/programs based on need.

b.	When there is no longer a need for such equipment to accomplish the purpose of the program or if the equipment becomes worn out or obsolete, the LEA/Consortium Fiscal Agent shall notify the IDPTE of this fact and request disposition instructions and specific

policies governing the particular piece of equipment (Prof-Tech Ed Form #23a). NO EQUIPMENT IS TO BE DIVERTED, SOLD OR TRADED WITHOUT WRITTEN PERMISSION FROM THE IDPTE. The IDPTE will determine the disposition of all equipment purchased with funds provided by the IDPTE.

c. Sale. The IDPTE may or may not require that money be refunded for its share of the proceeds of the sale of equipment. If a refund is required, it shall be at a rate of the original cost to the LEA/Consortium less the depreciation (see Item XI(e)).

d. Trade-In. The value of equipment traded will be subtracted from the cost of the new equipment purchased. The IDPTE will calculate the amount of reimbursement on the net cost to the LEA/Consortium. The inventory value of the new equipment will be the trade-in value plus the LEA/Consortium's cost plus the IDPTE share and equal to the purchase price with no "trade-in". The following example demonstrates this method:

New equipment cost	$900
Trade-in value of equipment traded	-200
Net cost	$700

Inventory value of new equipment equals:

Trade-in value	$200
IDPTE reimbursement	+329
LEA cost	+371
Inventory value	$900

1. All furniture, fixtures, desks, chairs, or similar equipment shall be based on a straight line depreciation method of 20 years or five percent per year with no estimated salvage value.
2. All instructional machines such as power driven saws, grinders, drill presses, all types of welders, washing machines, refrigerators or other equipment which may fall into this grouping, shall be based on a straight line depreciation method of 10 years or 10 percent per year with no estimated salvage value.
3. All computers, computer hardware and computerized equipment such as monitors, printers, CAD, CAM, automotive diagnostics, etc., shall be based on a straight line depreciation method of three years or 33 percent per year with no estimated salvage value. (Equipment can be used beyond the three year period if still serviceable.)
4. In determining the fair market value of equipment, the IDPTE shall have the prerogative to determine the specific category and the depreciated value of the equipment to be disposed of.

10 . TERMINATION OF PROGRAM

a. When a professional-technical program is terminated or temporarily discontinued the IDPTE will determine the time and method of disposition of the equipment.

When written notification provides reasonable assurance that a professional-technical program will be re-instated the school year following a program termination, a maximum period of one year may be allowed before disposition of equipment is undertaken.

b.   The IDPTE will determine the method of depreciation and amount due the federal or state government and notify the local district/Consortium Fiscal Agent accordingly. The value of such equipment will be determined on the basis of the sale price in case of a bona fide sale or the fair market value in the case of discontinuance of use, or diversion for other than professional-technical education purposes.

c.   The actual disposition of the equipment may be accomplished by either of the following methods:

1.   The LEA/Consortium Fiscal Agent shall return a cash refund to the IDPTE
2.   The IDPTE shall credit the LEA/Consortium Fiscal Agent in the amount of its share at the time of disposition of equipment and transfer such equipment to another professional-technical program or location.

d.   The IDPTE retains the option to transfer any or all equipment purchased solely with State and/or Federal funds.

e.   The value of the equipment will be determined as of June 30 of the fiscal year when the professional-technical program ceased operation. The value of all equipment shall be either the cash value as determined by the supplier of the equipment or the estimated depreciated value based on the following policy, whichever is higher:

Leadership Organizations

Students

The Technology Student Association (TSA) is the national organization for Technology Education students at the kindergarten through twelfth grade levels. Since TSA was chartered in 1978, over 1,500 chapters have been established in 45 states.

The mission of TSA is to create opportunities for students to become technologically literate, to receive leadership training and to become critical thinkers and problem solvers.

TSA chapters take the study of technology beyond the classroom and give students the chance to pursue academic challenges among friends with similar goals and interests. Together chapter members work on competitive events, attend conferences on the state and national level and have fun raising funds to get there.

To start a TSA chapter, all that is needed is a motivated technology teacher and an eager group of students. For more information about starting a local chapter visit the National TSA website at www.tsaweb.org or contact Ron Stone at 208-939-1404 x435.

Instructors

The International Technology Education Association (ITEA) is the largest professional educational association, principal voice, and information clearinghouse devoted to enhancing technology education through experiences in our schools (K-12). Its membership encompasses individuals and institutions throughout the world with the primary membership in North America.

- ITEA's mission is to advance technological capabilities for all people and to nurture and promote the professionalism of those engaged in these pursuits.

- ITEA seeks to meet the professional needs and interests of members as well as to improve public understanding of Technology Education and its contributions

- ITEA represents more than 40,000 technology educators in the U.S. alone who are developers, administrators, and university personnel in the field representing all levels of education.

- ITEA corporate members are comprised of leading technology companies.

- ITEA conducts various professional development programs and holds an Annual Conference -- the largest Technology Education showcase of exhibits and educational sessions in the world.

- ITEA publishes The Technology Teacher, Technology and Children, The Journal of Technology Education, The Technology Teacher e (the electronic version),Curriculum Brief, and a variety of other publications and videos that lead the profession by providing teaching directions, instructional ideas, and networking opportunities.

- ITEA has ten primary committees that coordinate all aspects of Technology Education and sponsor dozens of meetings, conferences, and exhibits each year.

- ITEA sponsors an active honors and awards program that recognizes outstanding teachers and programs (K-12) from states, provinces and countries that are affiliated with the Association.
- ITEA also presents award certificates and supports other programs which recognize outstanding efforts in the technology teaching profession.

- ITEA conducts a vigorous public policy program, frequently providing information to government, agencies, associations, and other special interest groups concerning Technology Education. The Association strives to provide an understanding of the importance of Technology Education to the future growth and well-being of all nations.

For additional information about ITEA visit their website at www.iteawww.org

Technology Education Association of Idaho
The Technology Association of Idaho(TEAI) is Idaho's professional organization for technology education instructors employed in elementary, middle school/junior high and high schools.

TEAI Philosophy
Technology Education is a comprehensive action-based educational program that is concerned with technical processes, the evolutions, utilization, and significance with industry and industries' organization, personnel systems, techniques, resources, products, and social and cultural impact. Technology Education programs assist individuals to understand industry and technology and to discover and develop individuals potential. Action-based activities provide the basis for the study of technology. These activities assist individuals in making informed and meaningful occupational choices, provide opportunities for creativity and problem solving, and prepare individuals for entry into advanced technical education postsecondary programs.

For more information visit TEAI's website at www.teai.org or contact Miles Carroll at Idaho Falls High School, 208-525-7740.